REMARKS

I. Introduction

In response to the Office Action January 24, 2007, Applicants have amended the specification to correct inadvertent errors. No new matter has been added.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

II. The Rejection Of Claims 1 And 2 Under 35 U.S.C. § 103

Claims 1 and 2 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kweon et al. (USP No. 6,783,890) in view of Okamura et al. (JP 06-150929). Applicants respectfully traverse this rejection for at least the following reasons.

With regard to the present invention, claim 1 recites a lithium ion secondary battery comprising: a positive electrode including a positive electrode active material comprising a lithium-containing composite oxide, a conductive material and a binder; a negative electrode; and a non-aqueous electrolyte, wherein said lithium-containing composite oxide is represented by the chemical formula: $Li_a(Co_{1-x-y}Mg_xAl_y)_bM_zO_c$

where M is at least one element selected from the group consisting of Na and K, and the values a, b, c, x, y and z respectively satisfy $0 \leqq a \leqq 1.05$, $0.005 \leqq x \leqq 0.15$, $0.0001 \leqq y \leqq 0.01$, $0.0002 \leqq z \leqq 0.008$, $0.85 \leqq b \leqq 1.1$ and $1.8 \leqq c \leqq 2.1$.

As is discussed on pages 5-7 of the specification, one feature of the present invention is that the narrow range of Na and K in the composition enables Na and K to exist in the crystal structure of the lithium-containing composite oxide in a preferred ratio, thereby preventing the

dissolving of Mg into an electrolyte during high temperature storage and the deterioration of storage characteristics. When the value of z (molar ratio of Na and K) is less than 0.0002, the stabilization of the crystal structure of the lithium-containing composite oxide becomes insufficient. Thereby, Mg dissolves out into an electrolyte during storage at high temperatures to decrease the capacity of the battery. When the value of z exceeds 0.008, an oxide of Na or K is produced and the amount of O_2 gas generated is increased, thereby expanding the battery. Accordingly, the difference between the battery thickness before storage and that after storage is increased.

In contrast to the present invention, Okamura discloses a very broad range for the concentration of Na or K, that being from 0 to 0.3 molar ratio. Furthermore, both Kweon and Okamura fail to disclose the unexpected superior characteristics derived from the limiting of Na and K to the narrow range of the claimed invention.

As is well known in patent law, a *prima facie* case of obviousness based on overlapping ranges can be rebutted by showing the criticality of the claimed range. *MPEP 2144.05 "Obviousness of Ranges"*. The superior and unexpected characteristics of a battery of the present invention as compared to a battery outside the ranges of Na and K recited in claim 1 (but within the range claimed in Okamura) are shown in Tables 3 and 4 of the specification. Examples 1-14 are batteries having a range of Na or K in the range cited in claim 1 ($0.0002 \leq z \leq 0.008$). Comparative Examples 7 and 9 are batteries having a molar ratio of Na (Comp. Ex. 7) or K (Comp. Ex. 9) of 0.01, which is outside the range of claim 1, but within the range cited in Okamura. The batteries of Examples 1-14 all showed positive electrode utilization values averaging approximately 136 mAh/g. In contrast, the batteries of Comparative Examples 7 and 9 exhibited very low positive electrode utilization values of 124.3 and 122.4 mAh/g, respectively.

Thus, as is clear from the data, batteries with concentrations of Na and K within the claimed ranges exhibit significantly superior and unexpected characteristics than batteries outside the claimed ranges.

As Applicants have clearly shown the criticality of the concentration of Na and K being from $0.0002 \leq z \leq 0.008$, and as Applicants have shown unexpected results arising from the claimed range, Applicants submit that the claimed invention is not obvious in view of Okamura, which claims a very broad range of concentrations of Na and K. As such, Applicants respectfully request that the § 103 rejection of claim 1 over Kweon and Okamura be withdrawn.

III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

IV. Rejection Of Claims 1 And 2 Under Nonstatutory Double Patenting Doctrine

Claims 1 and 2 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 3 of Okochi et al. (USP No. 7,150,942) in view of Okamura et al. (JP 06-150929). The Examiner alleges that the teachings of Okamura cited above combined with Okochi renders the present invention obvious.

The rejection has improperly rejected claims 1 and 2 under the non-statutory obviousness-type double patenting. As stated in the Office Action, non-statutory obviousness-

type double patenting is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claims because the examined application claim...would have been obvious *over the reference claim.* As such, the rejection has admitted that Okochi fails to disclose Na or K and cites Okamura as a second reference to support the allegation of obviousness. The rejection does not rely on Okochi alone to render the present application obvious. Thus, it is therefore implicit that the claims are not obvious over Okochi alone and therefore, the present invention is patentably distinct from Okochi. Accordingly, the non-statutory obviousness-type double patenting rejection is improper.

V. Conclusion

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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Date: April 24, 2007